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APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
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08/818,289 03/14/97 STARK

E 653.001US1

EXAMINER

MM21/0410

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ROSENBERGER PAPER NUMBER

2877

DATE MAILED:

04/10/98

This is a communication from the examiner in charge of your application.  
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

☒ Responsive to communication(s) filed on 1-20-98

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) \_\_\_\_\_ is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☒ Claim(s) 6, 11-15, 17-19, 22-26, 35, 43, 45-53, 56-71 is/are allowed.

☒ Claim(s) 1, 7, 33, 34, 32-40, 42 is/are rejected.

☒ Claim(s) 41 is/are objected to.

☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of Reference Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

RICHARD A. ROSENBERGER  
EXAMINER  
ART UNIT 255

—SEE OFFICE ACTION ON THE FOLLOWING PAGES—

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1. The amendment filed 20 January 1998 is objected to under 37 CFR 1.126 for improper numbering of newly added claims. The amendment adds two claims which are numbered in the amendment, ad 69 and 70. There has previously been added an claim 69; thus the two new claims need to be numbered 70 and 71 respectively. The claims have been so renumbered to bring them into correspondence with the rule.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 7, 34 and 37-40 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art discussed on pages 2-4 of the instant specification and Borsboom (US 4,884,891) in view of Howarth (US 3,994,602).

The specification, on page 3, states that "typically" in the prior art 1  
interactance measurements are made using a "central aperture surrounded a small  
distance away by a ring aperture"; a "ring aperture" would at least obviously be  
circular. Borsboom shows an arrangement with this structure, with a central

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aperture 2 and a circular ring 7 around the central aperture some distance apart; see figure 4 in particular. The ring of the prior art and of Borsboom are "extended in length" with "the total length of said extended surface area being substantially greater than the mean distance separating" the two areas defining the light path through the material. The arrangement of the prior art in the specification discloses only a single path through the sample.

It is known in the art to measure light passing through a material at two different distances; Borsboom teaches a second path though the object (scattered directly back) and Howarth (figures 6 and 7) teaches two different path lengths through the material, neither directly back. It thus would have been obvious to provide means, as in Howarth, to measure to different distances through the material being tested, because the art recognizes that this is useful. It would have been a straight-forward and obvious manner to do this in an arrangement such as shown by Borsboom of adding a second ring at the desired second distance.

Borsboom teaches, or at least clearly suggests, including a plurality of rings; in column 3 beginning on line 61 and running through column 4, line 1, that reference teaches

"...a sensor head could be made in which a large number of juxtaposed optical fibers of diameter  $d$  is *arranged concentrically around a central optical fiber with an increasing radius*. Measurements made with such a sensor head gives a good picture of the amount of reflected light that has entered the *fibres arranged concentrically in rings*, and hence of the light

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*reflection as a function of the distance from the light beamed into the material being investigated..." (emphasis added).*

This at least clearly suggests placing fibers in rings (plural) concentrically around the central fiber at different distances.

The use of other arrangements that concentric circles for the illumination and detection areas would be obvious because it is the transmission of light through the material, and not the particular geometry of the light source and detectors, that is of functional importance.

4. As set forth in previous office actions, claims 11-15, 17-19, 22-26, 35, 43 and 45-53 are allowable.

Applicant has submitted a declaration under 35 CFR 1.131 establishing a date for the claimed invention prior to the filing date of the Hirao et al reference (US 5,057,695). This reference was being used to show the known equivalence of having one light source and two detectors and of having two light sources and one detector in a multipath volume scattering apparatus. The remarks (paper filed 20 January 1998, page 11) argue that:

There is no basis from the teachings of any reference in the rejection to place emitters circumferentially distributed around the collectors [*sic* collector]. Claim 56, and all claims dependent therefrom are *prima facie* unobvious since there is absolutely no evidentiary basis for

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making the assertion that one of ordinary skill in the art has been taught to place emitters circumferentially around a receptor.

Given the removal of the Hirao et al reference, which in combination with the other references of the rejection, did at least suggest this, this argument appears correct for the remaining references absent Hirao et al. Therefor, claims 56-71, which claim this, appear to be allowable over the art of record. Also, claim 41 appears to contain this allowable subject matter, but is objected to as being dependent upon an unallowed claim, but would be allowable if rewritten in independent form including all of the limitations of its parent claims.

5. The amendments filed 20 January 1998 has amended claim 6 to include the limitation "providing optical directionality for radiation passing through at least one of said extended surface areas by orienting the optical axis at the respective probe surface area at an angle . . ."; this distinguishes over the art; thus claim 6 is allowable.

6. The amendment filed 20 January 1998 has added the "limitation" to claim 1 that the optical information obtained "from a specimen related to the analytes and interferences" within the material. This is inherent in the passage of light through

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the scattering body in the admitted prior art of the instant specification, Borsboom and Howarth. Note that claim 1 only states that the detected light represents such information, it does not claim any method step sufficient to extract the information. Further, it is noted that at least Borsboom teaches using filters, monochromators and the like (column 5, lines 5-7) which at least suggests actually obtaining such information. Note column 5, lines 42-43, which clearly discloses making "wavelength dependent measurements". Note also column 6, lines 10. Which teaches "using a spectrophotometer".

The amendment of 20 January 1998 has also changed "appropriate modeling techniques" to "appropriate *chemometric* modeling techniques". Note Borsboom, column 6, line 10, which teaches using the probe of that reference for chemical analyses.

7. The argument concerning the alleged "ineffectiveness of Hirao et al as a teaching of multiple paths" is noted. Due to the removal of that reference by the declaration under 37 CFR 1.131, the alleged "ineffectiveness" is entirely moot.

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8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

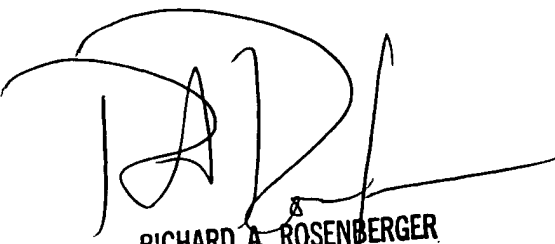
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

9. Papers related to this application may be submitted to Group 2500 by facsimile transmission. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The fax number is (703) 308-7722.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to R. A. Rosenberger whose telephone number is (703) 308-4804.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.

R. A. Rosenberger  
6 April 1998



RICHARD A. ROSENBERGER  
EXAMINER  
ART UNIT 255